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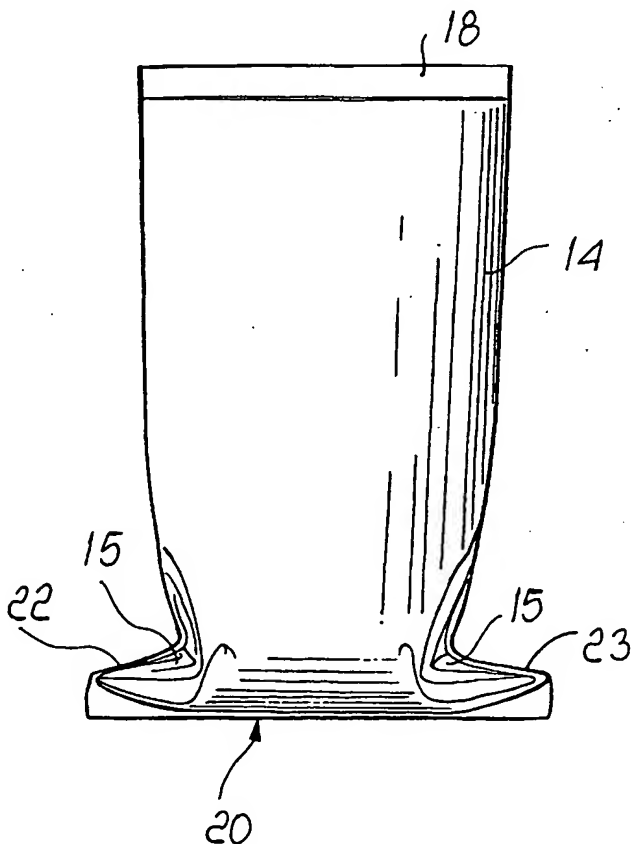
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(54) Title: CONTAINER WITH INHERENTLY STABLE BASE MADE OF FLEXIBLE MATERIAL AND METHOD FOR MANUFACTURING IT



(57) Abstract: A container made of flexible material with an inherently stable base and a method for manufacturing the container, the container being obtained in the shape of a pouch (14) which has, in the region that will form the base (20), heat-sealed lateral regions (15) and optionally ribbed guides (21) which, by virtue of the very weight of the material that is introduced or by way of a punch, produce a base (20) which makes the final container (14) inherently stable.

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# CONTAINER WITH INHERENTLY STABLE BASE MADE OF FLEXIBLE MATERIAL AND METHOD FOR MANUFACTURING IT

## Technical Field

The present invention relates to a container with an inherently stable, self-shaping base which is made of flexible material and to a method for manufacturing it.

## Background Art

Pouch-like containers made of flexible material, formed with a lightweight sheet starting from a tubular structure, are known and widely used.

These pouches, manufactured according to the state of the art, are poorly suited for containing liquids, granular products or powders which do not have a definite geometry of their own, so that the resulting containers are not inherently stable and cannot all be arranged in the same manner in the packages for transport and storage and in the points of sale and display.

According to the state of the art, containers are also known which instead have a shape of their own but are obtained with rigid or semirigid materials or with complicated structural configurations having a shape of their own which must not be modifiable by the product introduced therein.

This type of container entails a more expensive manufacturing process, and the material from which it is obtained also is more expensive.

Moreover, these containers are convenient only if they are manufactured on the filling line itself, since any storage thereof when empty would be excessively wasteful in terms of space occupation.

## Disclosure of the Invention

The aim of the present invention is to provide a container to be manufactured using flexible material which assumes and maintains, after filling, a very specific shape of its own.

An object is to provide a container which after filling is inherently stable, i.e., forms a very specific resting base.

Another object is to provide a container which is pouch-shaped before filling and can therefore be stored in rolls.

Another object is to provide a method for manufacturing a container with an inherently stable base made of flexible material which allows fast and  
5 low-cost manufacture.

These and other objects which will become better apparent hereinafter are achieved by a container with an inherently stable base made of flexible material, characterized in that it is initially constituted by a pouch which is heat-sealed along a continuous longitudinal line and along evenly spaced  
10 transverse lines, said pouch having, in the region where the base will be formed, heat-sealed regions which are substantially shaped like a triangle whose base coincides with the edge of the pouch and whose vertex wedges inside said pouch, said regions, preferably with the aid of ribbed folding guides, automatically determining the shape of the container with a  
15 predefined base when said container is filled with a liquid or granular product or is opened by way of a punch.

The present invention also relates to a method for manufacturing an inherently stable container made of flexible material, characterized in that it comprises the following steps:

20 a) folding a continuous film of flexible material of appropriate width, obtaining a pouch by way of a longitudinal heat-seal and by means of evenly spaced transverse heat-seals, a first one of which is followed by cropping;

b) heat-sealing in the sides of the pouch, in the region of the transverse  
25 heat-seal, two triangles, each of which has a base which coincides with one of the two edges of the pouch and a vertex which wedges toward the inside of said pouch;

c) filling the pouch with the product to be contained, or entering the pouch with a punch to open it;

30 d) folding and bonding, with an adhesive means, the wings that form

adjacent to the base simultaneously with the heat-sealing of the upper open mouth.

#### Brief description of the drawings

Further characteristics and advantages of the invention will become  
5 better apparent from the detailed description of a preferred embodiment and of a method for performing it, which are given by way of non-limitative example and are illustrated in the accompanying drawings, wherein:

Figure 1 is a schematic view of a line for manufacturing the container according to the invention;

10 Figures 1a, 1b and 1c are three schematic side views of what is shown in Figure 1;

Figure 2 is a view of alternative steps of the manufacture of the container according to the invention;

Figures 2a, 2b and 3c are three side views of what is shown in Figure 2;

15 Figure 3 is a view of the container before the lower wings are folded;

Figure 4 is a view of the container with its wings folded and with its upper mouth heat-sealed.

#### Ways of carrying out the Invention

With reference to the figures, the container according to the invention is  
20 obtained starting from a sheet 10 made of heat-sealable plastic material which is unwound from a roll 11 and is heat-sealed along a longitudinal line 12 after folding said sheet.

In a subsequent step, shaped bars 13 kept at a temperature which allows the melting of the sheet 10 provide, in the region that will correspond to the  
25 base region of the container 14 being formed, lateral triangles 15 and a heat-sealed transverse region 16 which closes the base of the container.

Simultaneously with the heat-sealing of the base through the heat-sealed region 16, the upper mouth of the container 17 that has already been formed and filled, is closed by way of a transverse heat-seal 18, while separation of  
30 said container is achieved by means of a cropping operation 19 which

separates the two containers in the heat-sealing regions.

Owing to the presence of the heat-sealed triangles 15, the weight of the introduced material determines the formation of a flat base 20 produced by the wedging of the heat-sealed triangles 15 with the optional aid of ribbed guides 21 which are formed in the same operation that forms the heat-sealed triangles 15.

As shown more clearly in Figure 3, the container 14 filled with material, by forming the base 20, forms two protruding wings 22 and 23 indeed because of the presence of the heat-sealed triangles 15.

These two wings, in a final operation, as shown in Figure 4, are folded against the container and are retained by heat-sealing or by applying an adhesive means along the mating line 24.

In this manner, the container 14, besides having a flat base 20 which allows to position it safely, has no external bulk-forming elements and can be packaged together with many others without wasting space.

Folding and gluing of the wings 22 and 23 occurs, as shown in Figure 2, with the aid of a shaped body 25 which has a heated seat 26 which duplicates the final shape of the base to be obtained, which forms due to the effect of the weight.

Said Figure 2 illustrates an auxiliary system for inserting, in the space occupied by the container, now designated by the reference numeral 27, the heat-sealed triangles in order to form the flat base.

Said auxiliary means are constituted by insertion blades 28 and 29 which, by rotating about two axes 30 and 31 which are parallel to the advancement line of the container, push the triangles, now designated by the reference numerals 32 and 33, inside the container 27.

In Figure 2, dashed lines show the two blades 28 and 29 also in a plan view, in which they are illustrated in two positions: an outer one, designated by the reference numerals 28a and 29a, and an inner one, designated by the reference numerals 28b and 29b, which illustrate the insertion of the

triangles.

The resulting container is highly advantageous, since by being formed from a flexible sheet it has all the characteristics and advantages of this type of container related to the manufacturing processes and to the printing  
5 thereon of designs and lettering.

Moreover, manufacturing can be of the continuous type, and this is very advantageous because it is inexpensive and uses thoroughly tested forming and filling machines.

Furthermore, the containers can be prepared empty and kept flat for  
10 storage until they are filled; during filling they assume their final shape by forming the flat base.

It clearly appears that the intended aim and objects have been achieved together with the corresponding advantages.

It is of course possible to use, as source materials, several known types  
15 of heat-sealable flexible material.

- The dimensions of the container may be any according to requirements.

The disclosures in Italian Patent Application No. PD99A000216 from which this application claims priority are incorporated herein by reference.

### CLAIMS

1. A container with an inherently stable base made of flexible material, characterized in that it is initially constituted by a pouch which is heat-sealed along a continuous longitudinal line (12) and along evenly spaced transverse lines (18), said pouch (14) having, in the region where the base (20) will be formed, heat-sealed regions (15) which are substantially shaped like a triangle whose base coincides with the edge of the pouch (14) and whose vertex wedges inside said pouch (14), said regions (15), preferably with the aid of ribbed folding guides (21), automatically determining the shape of the container (14) with a predefined base when said container (14) is filled with a liquid or granular product or is opened by way of a punch.

2. The container according to claim 1, characterized in that it has, in the region where the base is formed, triangles (15) which are obtained by heat-sealing the two overlapping sheets (10) that constitute the pouch (14) formed in the first forming step.

3. The container according to claim 2, characterized in that after filling and forming of the flat base (20), two wings (22, 23) form due to the presence of said heat-sealed triangles (15) and are folded against the lower part of said container (14).

4. The container according to claim 1, characterized in that said wings (22, 23) are rigidly coupled by adhesion to the walls of the container (14) so that they do not occupy additional space.

5. A method for manufacturing an inherently stable container made of flexible material, characterized in that it comprises the following operating steps:

a) folding a continuous film of flexible material of appropriate width, obtaining a pouch by way of a longitudinal heat-seal and by way of evenly spaced transverse heat-seals, a first one of which is followed by cropping;

b) heat-sealing in the sides of the pouch, at the region of the transverse heat-seal, two triangles, each of which has a base which coincides with one



of the two edges of the pouch and a vertex which wedges toward the inside of said pouch;

c) filling the pouch with the product to be contained, or entering the pouch with a punch to open it;

5 d) folding and bonding, with an adhesive means, the wings that form adjacent to the base simultaneously with the heat-sealing of the upper open mouth.

6. The method according to claim 5, characterized in that in a first step the film is folded so as to form a pouch which is closed longitudinally by  
10 heat-sealing the overlapping flaps of said film, said heat-seal being preferably located at the center of one of the two flat faces of said pouch.

7. The method according to claim 5, characterized in that the longitudinal dimension of the pouch is obtained by way of transverse heat-seals.

8. The method according to claim 5, characterized in that an operation  
15 for heat-sealing the two overlapping sheets of flexible material that constitute the pouch forms, at the base, two triangles the vertex whereof wedges inside said pouch.

9. The method according to claim 5, characterized in that ribs are optionally also formed in the same operation for forming the heat-sealed  
20 triangles, said ribs being adapted to facilitate, by guided deformation, the container when it is filled.

10. The method according to claim 5, characterized in that the operation for filling with the product comprises forming a substantially flat base, while the two wings which are produced by the presence of the heat-sealed  
25 triangles protrude laterally beyond said base.

11. The method according to claim 10, characterized in that in a subsequent step said wings are folded toward the container and are retained thereon.

12. The method according to claim 5, characterized in that the insertion  
30 of the heat-sealed triangles inside the container can be facilitated by pushing

means which push said triangles from the outside inward.

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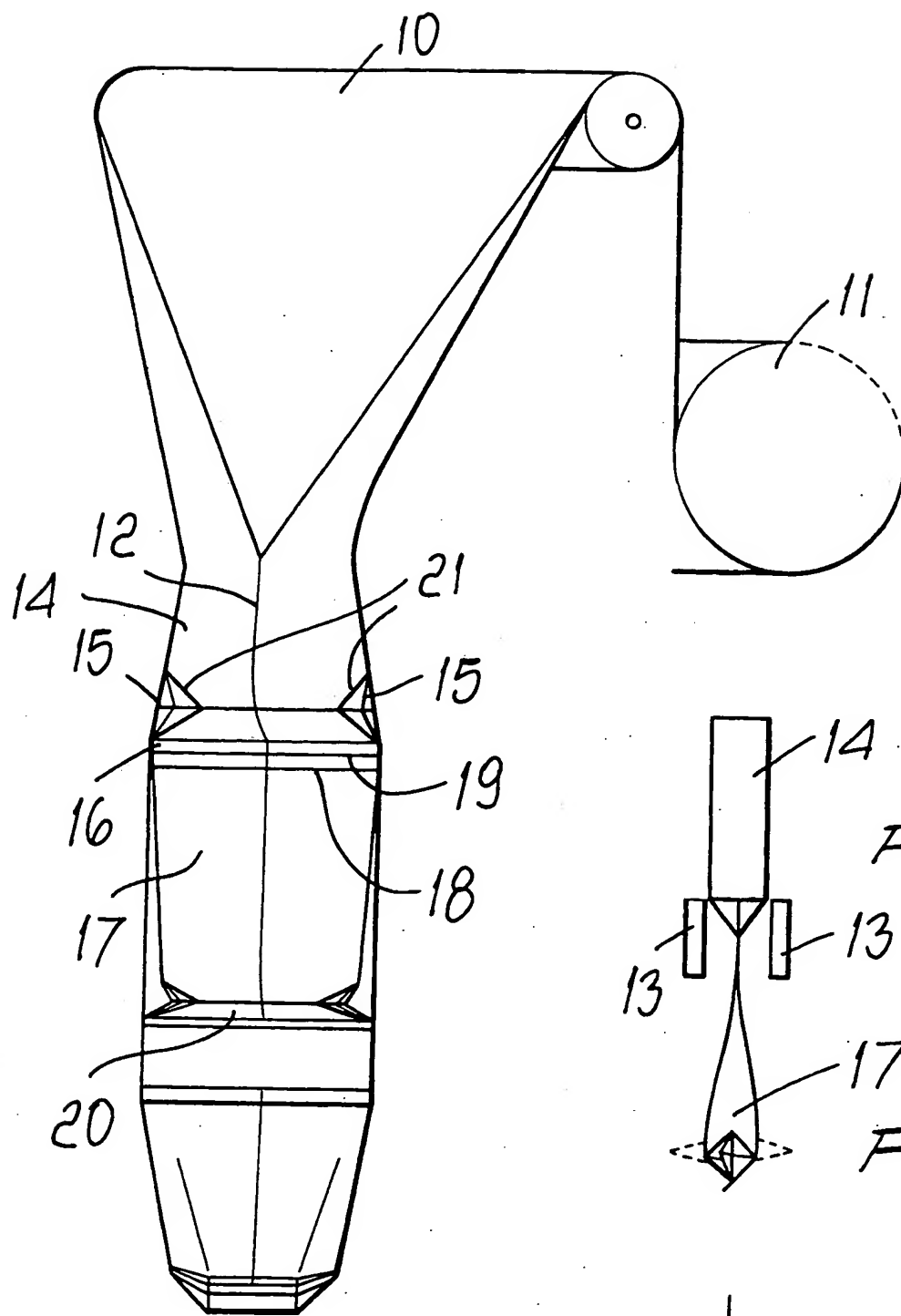


Fig. 1

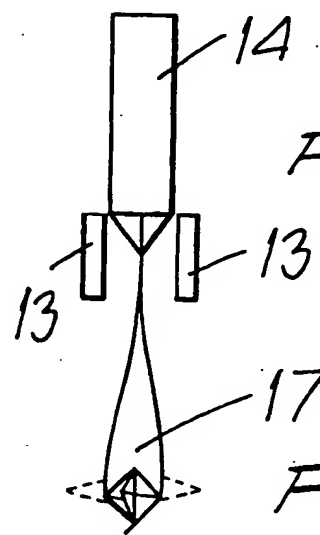


Fig. 1a

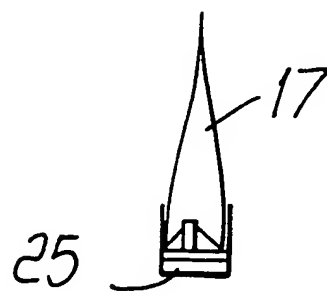


Fig. 1b

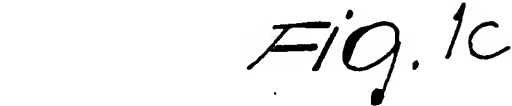
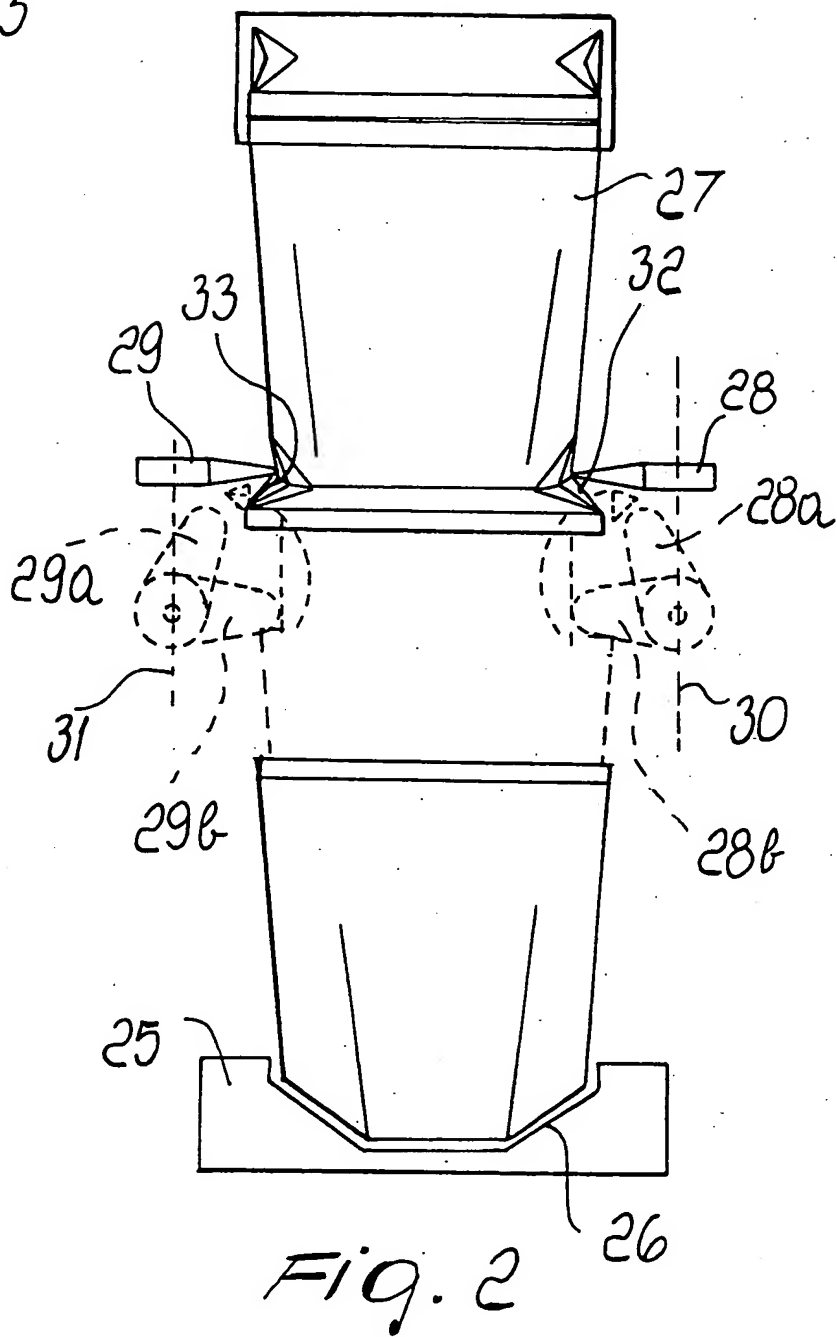
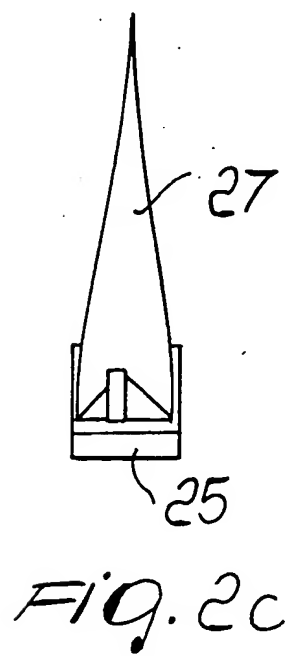
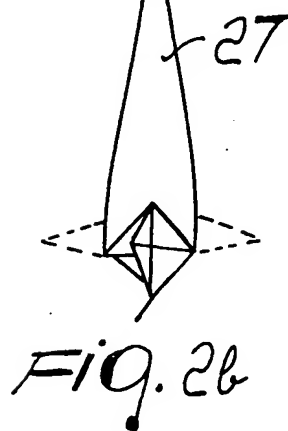
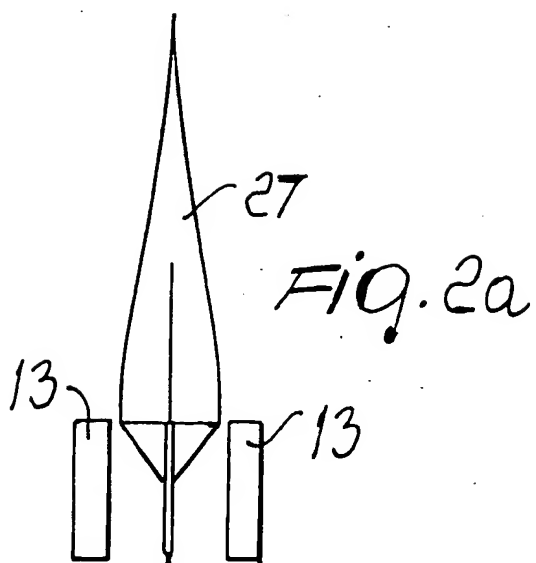


Fig. 1c



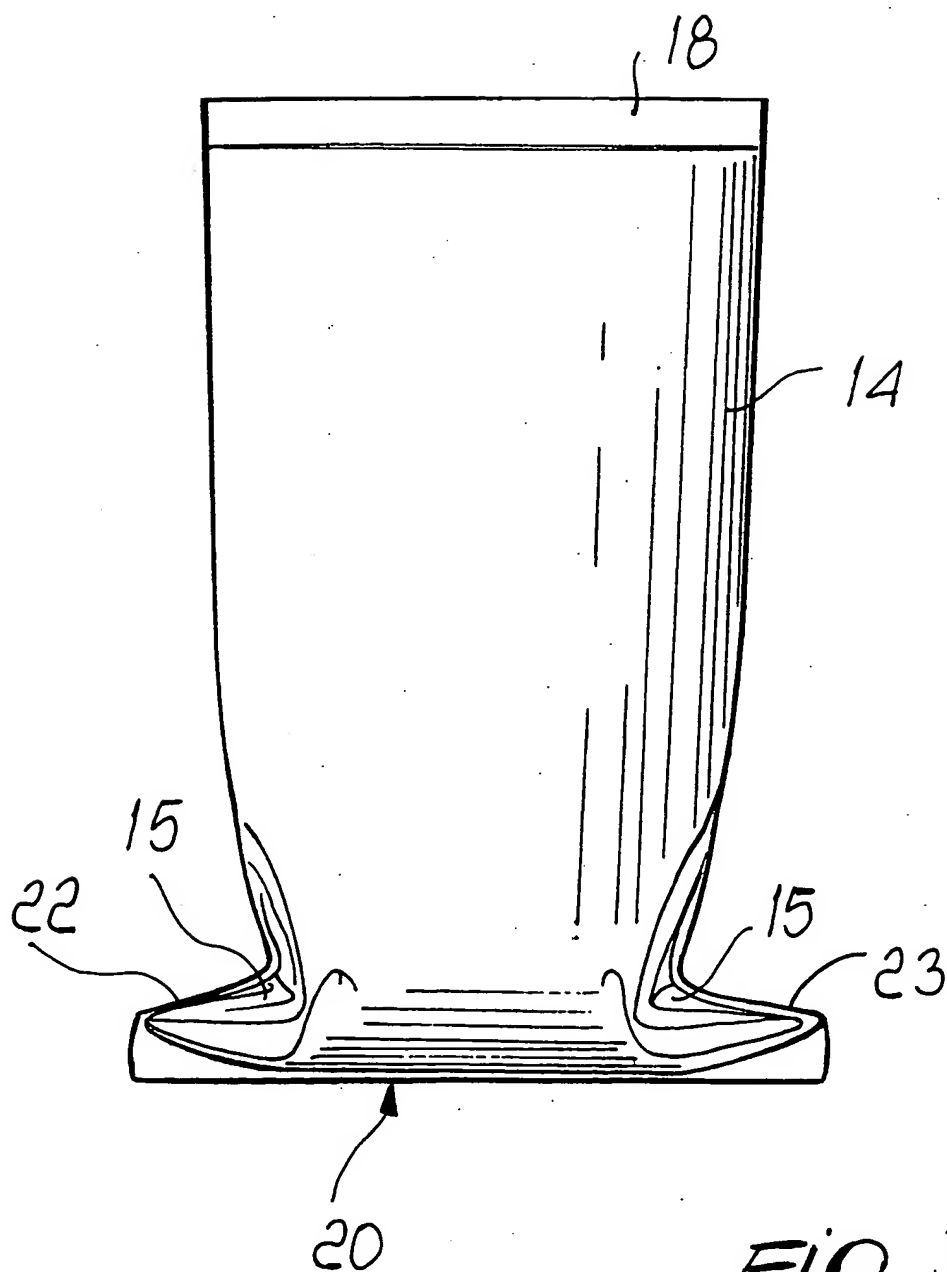


FIG. 3

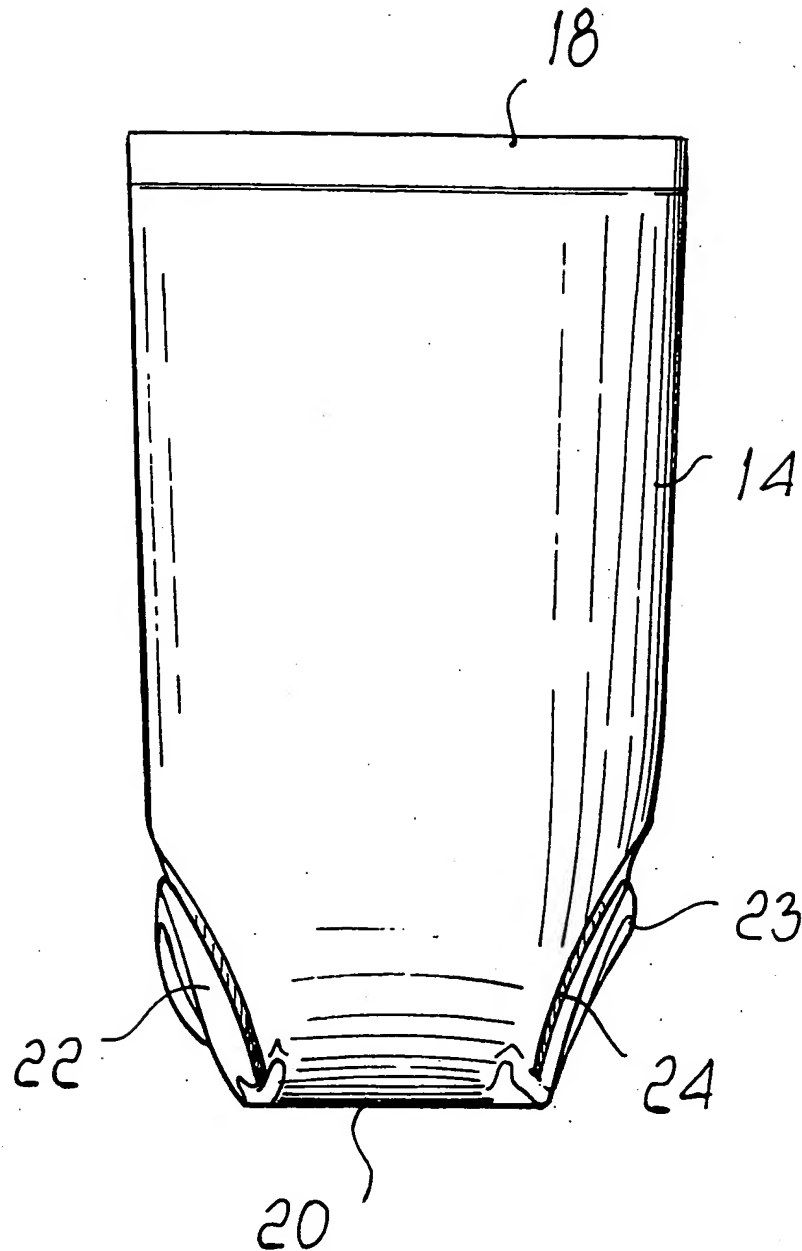


FIG. 4

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 B65D75/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

 Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 759 981 A (HIRAI TAKAO) 28 August 1998 (1998-08-28)	1
Y	page 4, line 21-25 page 6, line 7-26 page 7, line 7-19 page 9, line 9-11; figure 3 ---	4
Y	FR 2 671 052 A (PACKART SA) 3 July 1992 (1992-07-03)	4
A	page 6, line 16-21; figures 2-4 ---	1-3
A	WO 98 18674 A (BL MACCHINE AUTOMATICHE ;VETTORATO NATALE (IT)) 7 May 1998 (1998-05-07) page 5, line 4 -page 7, line 10 --- -/--	1-5

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 1 115 636 A (SCHNEIDER W. S., CORELLA A. P.) 29 May 1968 (1968-05-29) page 2, line 88 -page 4, line 103; figures 1,10-13  -----	1,5



Patent document cited in search report		Publication date	Patent family member(s)		Publication date
FR 2759981	A	28-08-1998	NONE		
FR 2671052	A	03-07-1992	NONE		
WO 9818674	A	07-05-1998	IT	B0960550 A	30-04-1998
			AU	4470297 A	22-05-1998
			EP	1007408 A	14-06-2000
GB 1115636	A		NONE		